End-of-Grade Mathematics Tests at Grades 3–8
North Carolina Test Specifications

Purpose of the Tests

- The Grades 3–8 End-of-Grade (EOG) Mathematics Tests measure students' proficiency on the *NC Standard Course of Study* (NC*SCOS*) for Mathematics, adopted by the North Carolina State Board of Education in June 2017.
- Test results will be used for school and district accountability under the accountability model and for federal reporting purposes.

Curriculum Cycle

- June 2017: The North Carolina State Board of Education adopted the NC*SCOS* for Mathematics.
- 2017–2018: Items developed and field-tested for the EOG Mathematics Tests
- 2018–2019: First operational administration of EOG Mathematics Tests (Edition 5)

Standards

- The eight Standards for Mathematical Practice help develop processes and proficiencies in students such as problem solving, reasoning, proof, communication, representations, and connections as well as conceptual understanding and procedural fluency. Test items that are developed for content standards may link to one or more of the Standards for Mathematical Practice.

Developing Tests

- North Carolina educators were recruited and trained to write new items. The diversity among the item writers and their knowledge of the current standards was addressed during recruitment. Trained North Carolina educators also review items and suggest improvements, if necessary. The use of North Carolina educators to develop and review items strengthens the content validity of the items.
- For an in-depth explanation of the test development process see North Carolina State Board Policy Multiple-Choice Test Development (TEST-013) or reference the Test Development Process: Item, Selection, and Form Development document.

Prioritization of Standards

- Members of the North Carolina Department of Public Instruction (NCDPI)/Test Development Section invited North Carolina educators to collaborate and develop recommendations for a prioritization of standards indicating the relative importance of each standard, the anticipated instructional time, and the appropriateness of the standard for test design.
- Subsequently, Standards, Curriculum and Instruction and test development staff from the NCDPI met to review the recommendations from the teacher panels and to adopt final weight distributions across the domains for each grade level.
- Some content standards in the NC*SCOS* for Mathematics, will not be directly assessed in

the tests because either (1) the standard cannot be appropriately assessed during a limited time test using multiple-choice and/or gridded-response items or (2) the standard is better assessed through another, more inclusive standard.

- *Tables 1*, *2*, and *3* describe the range of total items by conceptual category and Depth of Knowledge (DOK) that will appear on the End-of-Grade Mathematics Tests.

Table 1: Weight Distributions for EOG Mathematics Grades 3–5

Domain	Grade 3	Grade 4	Grade 5
Operations and Algebraic Thinking	32–36%	14–18%	9–13%
Number and Operations in Base Ten	9–13%	25–29%	25–29%
Number and Operations - Fractions	28–32%	30–34%	39–43%
Measurement and Data, Geometry	23–27%	23–27%	19–23%
Total	**100%**	**100%**	**100%**

Table 2: Weight Distributions for EOG Mathematics Grades 6–8

Domain	Grade 6	Grade 7	Grade 8
Ratios and Proportional Relationships	24–28%	24–28%	—
The Number System	20–24%	8–12%	—
Expressions and Equations	22–26%	20–24%	—
The Number System, Expressions and Equations	—	—	24–28%
Functions	—	—	28–32%
Geometry	12–16%	16–20%	24–28%
Statistics and Probability	12–16%	22–26%	16–20%
Total	**100%**	**100%**	**100%**

Table 3: EOG Math 3–8 Item by DOK Distribution

Grades	DOK1	DOK2	DOK3
3	40–50%	50–60%	—
4	35–45%	50–60%	5%
5	30–40%	50–60%	8–10%
6	25–35%	50–60%	8–15%
7	25–35%	50–60%	8–15%
8	25–35%	50–60%	8–15%

Cognitive Rigor and Item Complexity

- Test items will be designed, developed, and classified to ensure that the cognitive rigor of the operational test forms align to the cognitive complexity and demands of Webb's Depth of Knowledge and the NC*SCOS* for Mathematics. These items will require students to not only recall information, but also apply concepts and skills and make decisions.

Test Structure and Administration Time

- *Table 4* provides the number of operational items and field test items. Embedded field test items will not be included in the score but will be used for purposes of developing items for future test forms.

Table 4: EOG Mathematics Total Number of Items

Grade	3	4	5	6	7	8
Operational Items	40	40	40	45	45	45
Field Test Items	6	6	8	8	8	8
Total Items	**46**	**46**	**48**	**53**	**53**	**53**

- The grades 3 and 4 mathematics tests will include both calculator inactive and calculator active sections. The tests will consist of four-response-option multiple-choice items. Multiple-choice items will be worth one point each.
- The grades 5–8 mathematics tests will include both calculator inactive and calculator active sections. Both sections will have multiple-choice and gridded response/numeric entry item types. All items will be worth one point each.

Table 5: EOG Mathematics Calculator Active/Inactive Operational Items

Grade	3	4	5	6	7	8
Calculator Inactive Operational Items	20	20	20	15	15	15
Calculator Active Operational Items	20	20	20	30	30	30

- The EOG Mathematics Tests are not designed to be speeded or power tests. Students should have enough time to show what they know and are able to do. Thus, test administration times are based on analysis from item completion timing data. The NCDPI has estimated it will take about 2 hours (120 minutes) for most students to complete the EOG Mathematics Tests. The NCDPI requires all students be allowed ample opportunity to complete the test. The maximum amount of time allowed for regular administration is 3 hours (180 minutes) except for students with documented special needs requiring accommodations, such as *Scheduled Extended Time*. Refer to the *North Carolina Test Coordinators' Policies and Procedures Handbook* for additional information.

Supplemental Materials

- Students in grades 3–5 must be provided any four-function calculator with memory key. Students in grade 6–8 must be provided any four-function calculator with a square root function, y, x, π (pi), and algebraic logic. The online version of these tests has an online calculator option. Students may practice using this online calculator at:
  - Grades 3–5: Four-Function Calculator (www.desmos.com/testing/northcarolina/fourfunction)
  - Grades 6–7: Scientific Calculator (www.desmos.com/testing/northcarolina/scientific)
  - Grade 8: Scientific or Graphing Calculator (www.desmos.com/testing/northcarolina/scientific), (www.desmos.com/testing/northcarolina/graphing)
  - Refer to the *North Carolina Testing Program Calculator Requirements Assessment Brief* for additional information,
- All students must be provided graph paper and blank paper.
- Schools must ensure every student participating in an online test for the North Carolina Testing Program completes the Online Assessment Tutorial for the associated test at least once at the school before test day. The tutorial provides students the opportunity to

practice the mechanics of navigating through the testing platform, to become familiar with the tools, and to respond to the sample items. Refer to the *North Carolina Test Coordinators' Policies and Procedures Handbook* for additional information.

- Released forms are available on the EOG webpage and through NCTest, the NCDPI's online testing platform. The released form is built using the same operational test specifications. A single release form may not reflect the full depth and breadth of grade level assessed standards, but it reflects the range of difficulty found on any operational test form.
    - Released items may be used by Public School Units to acquaint students with items. These materials must not be used for personal or financial gain.

Test Cycle and Delivery Mode

- The EOG tests must be administered during the last ten (10) days of the school year. All students in membership at grades 3–8 (according to PowerSchool) are expected to participate with or without accommodations in the standard administration of the EOG tests.
- The Grades 3–8 EOG Mathematics Tests are designed for online administrations. Paper/pencil versions of all online tests, including required online administrations, are available for technology hardship situations and for students with disabilities who need to test in the paper mode for accessibility.
- The EOG tests are only provided in English. Native language translation versions are not available. North Carolina G.S.§115C-81.45(a) requires all teachers and principals to conduct classes except foreign language classes in English.

Additional Resources

- Achievement level information is available on the EOG webpage.
- Sample Individual Student Reports are available on the NCDPI Individual Student Reports (ISR) webpage.